

Translation

PATENT COOPERATION TREATY

PCT/JP2003/010759



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 03-F-052PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/010759	International filing date (day/month/year) 26 August 2003 (26.08.2003)	Priority date (day/month/year) 26 August 2002 (26.08.2002)
International Patent Classification (IPC) or national classification and IPC C12M 3/00, 1/12, 1/34		
Applicant JAPAN SCIENCE AND TECHNOLOGY AGENCY		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 26 January 2004 (26.01.2004)	Date of completion of this report 17 September 2004 (17.09.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/010759

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished

- ☒ the description:

pages _____ 1-8 _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

- ☒ the claims:

pages _____ 1 _____, as originally filed/furnished

pages* _____, as amended (together with any statement) under Article 19

pages* _____ 2-9 received by this Authority on 27 August 2004 (27.08.2004)

pages* _____ received by this Authority on _____

- ☒ the drawings:

pages _____ 1-7 _____, as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP 03/10759

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-9	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-9	NO
Industrial applicability (IA)	Claims	1-9	YES
	Claims		NO

2. Citations and explanations

Citations:

Document 1: JP 2002-153260 A (Japan Science and Tech. Corp.), 28 May 2002

Document 2: JP 11-187865 A (Matsushita Electric Ind. Co., Ltd.), 13 July 1999

Document 1 discloses a cell cultivation microchamber characterized in that said microchamber comprises a plurality of partitioning walls for entrapping cells in a specific spatial arrangement and an optically transparent semi-permeable membrane that is disposed over said partitioning walls; and discloses the feature of cultivating cells within said chamber while monitoring said cells with an optical microscope means.

Document 2 discloses cell potential measuring electrodes comprising microelectrodes and reference electrodes (i.e. an electrode pattern) upon which a partitioning wall (wall part) that entraps nerve cells in a specific spatial arrangement for cultivation is disposed.

Claim 1

The invention that is set forth in claim 1 of the present application could easily have been conceived of by a person skilled in the art in the light of the disclosures of documents 1 and 2 cited in the international search report and common technical knowledge prior to the priority date of the present application; therefore, it does not involve an inventive step.

Explanation:

It would be easy for a person skilled in the art to select nerve cells, which are one of the various types of cells that can be subjected to conventional cultivation and observation methods, as the cells that are cultivated as disclosed in document 1. Furthermore, when cultivating nerve cells, it would be easy for a person skilled in the art to not only monitor the nerve cells that are being cultivated in said chamber using an optical microscope means, but to also provide the electrode pattern that is disclosed in document 2 to each cultivation section (hole) in the chamber in order to monitor changes in the potentials of the nerve cell(s) in each cultivation section.

Meanwhile, in the written response submitted on 27 August 2004, the applicant asserts that "in the 'monitoring device' that is disclosed in cited document 1...cultivation sections are formed by providing holes in the substrate, and it would be difficult to provide the 'electrodes' that are disclosed in cited document 2 to a substrate that has such a form. Hypothetically, even if the electrodes were provided in some manner, the electrode parts would change the shape of the holes that constitute the cultivation sections; therefore, there is a possibility that it would not be possible to measure the potential of the cells...correctly," whereas "in the

invention set forth in the present application, the use of a photo-curing resin makes it possible to easily provide umbilicate cell cultivation sections without forming holes directly in the substrate, thereby making it possible to resolve the problems that arise when arranging the abovementioned electrodes" (page 4, line 18 to page 5, line 10).

However, when providing an electrode pattern to the cultivation sections, a person skilled in the art could substitute a method wherein holes are opened through to the base part for the method wherein holes are formed within the substrate, and then employ a method whereby the electrode patterns are imbedded in the base part in order to facilitate the provision of the electrode pattern, as necessary.

With regards to the effects that are exhibited by the invention that is set forth in the present application, in the same written opinion the applicant asserts that "the invention set forth in the amended application is characterized in that 'it is possible to cultivate nerve cells over a long period of time and continuously measure changes in the form or the electrical characteristics thereof while controlling the spatial arrangement of the network of nerve cells in single cell units,'" and that the invention exhibits advantageous features such as the that wherein "it is possible to continuously optically monitor the formation of the cell network" (page 2, line 19 to page 3, line 9).

However, claim 1 merely recites the feature of "comprising a plurality of partitioning walls for entrapping nerve cells in a specific spatial arrangement," and makes disclosures including states wherein the cells are completely isolated and cannot form a network; therefore, the invention that is set forth in claim 1 includes configurations that do not exhibit the effects of

the invention that is set forth in the present application, whereby it is possible to measure the "changes in the electrical characteristics" of the cells or to continuously observe the formation of the network.

Consequently, the abovementioned assertion by the applicant cannot be taken into consideration.

Claims 2-9

A person skilled in the art could easily have configured the inventions that are set forth in claims 2-9 in the light of the disclosures of documents 1 and 2 cited in the international search report and common technical knowledge prior to the priority date of the present application.

Explanation:

A person skilled in the art could set the number of cell regions (i.e. cultivation sections) that are delimited by the partitioning walls and the number of electrodes (reference electrodes and microelectrodes) corresponding to each region within the microchamber that is set forth in claim 1, as necessary according to the purpose of the invention.

In addition, a person skilled in the art could further add the configurations that are set forth in claims 2-5, 8 and 9, as necessary.